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| EXAMINER |
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HASAN, MOHAMMED A

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| ART UNIT | PAPER NUMBER |
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2873

| SHORTENED STATUTORY PERIOD OF RESPONSE | MAIL DATE | DELIVERY MODE |
|--|------------|---------------|
| 3 MONTHS | 02/08/2007 | PAPER |

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

| | | | |
|------------------------------|-------------------------------|-------------------------------|--|
| Office Action Summary | Application No. 10/530,528 | Applicant(s) KIMURA ET AL. | |
| | Examiner Mohammed Hasan | Art Unit 2873 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 8-15 and 18-26 is/are rejected.
- 7) ☒ Claim(s) 5-7, 16 and 17 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 April 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date <u>4/7/2005</u> . | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Oath/Declaration

1. Oath and declaration filed on 11/8/2005 is accepted.

Information Disclosure Statement

2. The prior art documents submitted by applicant in the Information Disclosure Statement filed on 4/7/2005 have all been considered and made of record (note the attached copy of form PTO – 1449).

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-4, 8-15, and 18-22 are rejected under 35 U.S.C. 102 (b) as being anticipated by Matsuzawa et al (5,835,285).

Regarding claim 1, Matsuzawa et al discloses (refer to figure 1) a zoom lens comprising at least three lens groups (G1-G3) that are arranged in order of a first lens group (G1) that has a positive refractive power, and a second lens group (G2) that has a negative refractive power, as seen from the side having longer conjugate distance,

FILE 1

Regarding claim 2, Matsuzawa et al discloses, wherein the refractive power of the lenses of the second lens group (G2) is positive, negative, negative, positive, and negative, as seen from the side having longer conjugate distance (as shown in figure 1).

Regarding claim 3, Matsuzawa et al discloses, wherein the refractive power of the lenses of the second lens group (G2) is positive, negative, negative, negative, positive, and negative, as seen from the side having longer conjugate distance (as shown in figure 1).

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Regarding claim 4, Matsuzawa et al discloses ,wherein the following relation ship $-0.6 < f_{2g}/f_{2top} < -0.15$ where f_{2top} is a focal length of a first lens, as seen from the side having the longer conjugate distance, of the lenses of the second lens group , and where f_{2g} is the focal length of the second lens group (Table 2).

Regarding claim 8, Matsuzawa et al discloses (refer to figure 1) wherein the first lens group (G1) that positive refractive power, a second lens group (G2) that a negative refractive index and the third lens group (G3) that has a positive refractive index, are arranged in that order from the side having the longer conjugate distance, wherein when changing magnification from the wide angle end to telephoto end, the first lens group, a second lens group and that third lens group move along the optical axis (column 2, lines 20-25), and the first lens group moves monotonically toward the side having the longer conjugate distance, the second lens group moves monotonically toward the side having shorter conjugate distance and the third lens group moves monotonically toward the side having the longer conjugate distance and the following relation is satisfied: $1.6 < bfw/fw < 2.4$ where bfw is the air equivalent back focus of the zoom lens at the wide angle end when at infinity and where fw is the focal length of the zoom lens at the wide angle end (Table 2).

Regarding claim 9, Matsuzawa et al discloses , wherein the following relation ships are satisfied: $0.05 < fw/f_{1g} < 0.2$, $-0.9 < fw/f_{2g} < -0.6$, $0.5 < fw/f_{3g} < 0.7$ where f_{1g} is the focal length of the first lens group, where f_{2g} is the focal length of the second lens group , where f_{3g} is the focal length of the third lens group, and where fw is the focal length of the zoom lens at the wide angle end (Table 2).

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Regarding claim 10, Matsuzawa et al discloses (refer to figure 1) wherein the first lens group (G1) that positive refractive power, a second lens group (G2) that a negative refractive index and the third lens group (G3) that has a positive refractive index (column 2, lines 20-25 , are arranged in that order from the side having the longer conjugate distance, wherein when changing magnification from the wide angle end to telephoto end , the first lens group, a second lens group and that third lens group move along the optical axis (as shown in figure 1).

Wherein the first lens group moves monotonically toward the side having the longer conjugate distance, the second lens group moves monotonically toward the side having shorter conjugate distance and the third lens group moves monotonically toward the side having the longer conjugate distance and the following relation is satisfied: $1 < bfw/fw < 1.8$ where bfw is the air equivalent back focus of the zoom lens at the wide angle end when at infinity and where fw is the focal length of the zoom lens at the wide angle end (Table 2).

Regarding claim 11, Matsuzawa et al discloses, wherein the following relationships are satisfied: $0.3 < fw/f1g < 0.4$, $-1.6 < fw/f2g < -1.3$, $0.7 < fw/f3g < 0.9$ where f1g is the focal length of the first lens group, where f2g is the focal length of the second lens group, where f3g is the focal length of the third lens group, and where fw is the focal length of the zoom lens at the wide angle end (Table 2).

Regarding claim 12, Matsuzawa et al discloses (refer to figure 1) wherein the first lens group (G1) that positive refractive power, a second lens group (G2) that a

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negative refractive index and the third lens group (G3) that has a positive refractive index, are arranged in that order from the side having the longer conjugate distance, wherein when changing magnification from the wide angle end to telephoto end, the first lens group, a second lens group and that third lens group move along the optical axis (column 2, lines 20-25).

Wherein the first lens group moves monotonically toward the side having the longer conjugate distance, the second lens group moves monotonically toward the side having shorter conjugate distance and the third lens group moves monotonically toward the side having the longer conjugate distance and the following relation is satisfied: $.5 < bfw/fw > 1.3$ where bfw is the air equivalent back focus of the zoom lens at the wide angle end when at infinity and where fw is the focal length of the zoom lens at the wide angle end (Table 2).

Regarding claim 13, Matsuzawa et al discloses, wherein the following relationships are satisfied: $0.45 < fw/f1g < 0.6$, $-2.0 < fw/f2g < -1.6$, $0.9 < fw/f3g < 1.3$ where f1g is the focal length of the first lens group, where f2g is the focal length of the second lens group, where f3g is the focal length of the third lens group, and where fw is the focal length of the zoom lens at the wide angle end (Table 2).

Regarding claim 14, Matsuzawa et al discloses, wherein Abbe number of all lenses having positive refractive power that are arranged on the side having the shorter conjugate distance with respect to an aperture is at least 80 (Table 3).

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Regarding claim 15, Matsuzawa et al discloses wherein the Abbe number of all lenses having negative refractive power that are arranged on the side having the shorter conjugate distance with respect to an aperture at least 35 (Table 3).

Regarding claim 17,

Regarding claim 18, Matsuzawa et al discloses, wherein the zoom lens is a projecting lens for a projector (column 1, lines 59-60).

Regarding claim 19, Matsuzawa et al discloses wherein the magnification ratio of the entire lens system is used in a range of -0.00058 times to -0.0188 times (as shown in figure 1).

Regarding claim 20, Matsuzawa et al discloses, wherein the F number is 2.5 or 2.4 (table 2).

Regarding claim 21, Matsuzawa et al discloses, wherein the zoom ratio is 1.5, 1.6 or 1.65 (table 2)

Regarding claim 22, Matsuzawa et al discloses, wherein the zoom lens does not have a joined surface (as shown in figure 1).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 23-26 rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuzawa et al (5,835,285) in view of Lewis et al (2002/0024708 A1).

Regarding claims 23 and 24, applied to claim 1, Matsuzawa et al discloses all of the claimed limitations above in claim 1, except a light source, light modulator.

However, Lewis et al discloses (refer to figure 2, and 41) discloses a light source and a light modulator light source 50, modulator (paragraph 0164).

It would have been obvious to one of ordinary skill in the art at the time invention was made to provide a light source and an optical modulator in to the Matsuzawa an optical projector for the purpose improving resolution in display as taught by as taught by Lewis et al (paragraph 0001).

Regarding claim 25, Lewis et al discloses, a rear projector comprising a mirror (54) that bends the light that is projected from a projecting lens and transmissive type screen (62) for reflecting an image of projected light (as shown in figure 2).

Regarding claim 26, Lewis et al discloses, a multivision system comprising: a plurality of system comprising: a transmissive-type screen for reflecting an image of projected light, a casing further comprising an image separating circuit (as shown in figure 28).

Allowable Subject Matter

5. Claims 5, 6, 7, 16, and 17 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: The prior art fails to show wherein the following relationship is satisfied: $0.25 < f_{\text{rear}}/f_{2\text{top}} < 0.95$ where $f_{2\text{top}}$ is a focal length of a first lens, as seen from the side having the longer conjugate distance, and where f_{rear} is the focal length of the lens group on the side having the shorter conjugate distance, with respect to an aperture stop, and where in the front lens as seen from the side having the longer conjugate distance, is a negative lens and wherein the following relationships are satisfied: - $0.018 < (1/f_1/abe_1)/(1/f_{\text{rear}}) < 0$, $1.7 < nd_{11} < 1.79$ where f_1 is the focal length of the negative lens, where abe_1 is the Abbe number and where nd_{11} is the refractive index at the d line, and where f_{rear} is the focal length of the lens group on the side having the shorter conjugate distance, with respect to an aperture stop, wherein four lenses as seen from the shorter conjugate distance comprises: from the side having the longer conjugate distance, a negative meniscus lens whose convex surface faces the side having the longer conjugate distance, a positive lens, a negative meniscus lens which convex surface faces the side having the shorter conjugate distance and a positive lens wherein the following relationship is satisfied: $nd_4 > 1.75, vd_4 > 40, 1 < f_4r/bfw < 4$ where

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nd4 is the refractive index at the lined line of the negative meniscus lens that is on the side having the longer conjugate distance, where vd4 is the Abbe number, where f4r is the focal length of the four lenses and where bfw is the air equivalent back focus that does not include a prism and a cover glass when the wide angle end, wherein the first lens group that has a positive refractive power, the second lens group has a negative refractive index and the third lens group that has a positive refractive index arranged in that from that side having the longer conjugate distance, wherein when changing magnification from the wide angle end to telephoto end, the first lens group is fixed and the second lens group and the third lens group move along the optical axis, wherein the second lens group moves monotonically toward the having the shorter conjugate distance and third lens group moves monotonically toward the side having the longer conjugate distance and an aperture stop moves in conjunction with the third lens group and wherein the following relationship is satisfied: $|DG3/FWI| < 0.15$ where DG3 is the amount that third lens group moves from the wide angle end to the telephoto end and where fw is the focal length of the zoom lens at the wide angle end., and the following relationship is satisfied: $| (DG1-DG3)/fw | < 0.15$ where DG1 is the amount that the first lens group moves from the wide angle end to the tele photo end ,DG3 is the amount that third lens group moves from the wide angle end to the telephoto end and where fw is the focal length of the zoom lens at the wide angle end.

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The closest prior art Suenaga et al (5,930,049) discloses a projection optical system and method of using such system for manufacturing device.

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mohammed Hasan whose telephone number is (571) 272-2331. The examiner can normally be reached on M-TH, 7:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky L Mack can be reached on (571) 272- 2333. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MH
February 4, 2007

M. Hasan
Mohammed Hasan
Examiner, AU-2873